

## **Amendments to the Claims**

This listing of claims replaces all prior versions and listings of claims in the application.

### **Listing of Claims:**

1. (Currently Amended) A method for asynchronously replicating data changes in a database system, the method comprising:

(a) capturing, from a database log associated with the database system, information corresponding to an update of a data value of an object for a data update in a source table from a database log associated with the database system, wherein a the database log not including the data value from the data update is not in the database log of the object, wherein the update information corresponding to the update of the data value of the object comprising comprises a key column value that identifies a row in the source table in which the object resides; and

(b) building a query to obtain the data value of the object from the source table, the query including the key column value that identifies the row in the source table in which the object resides; using the update information;

executing the query;

receiving the data value of the object from the source table in response to the query; and

replicating the update of the data value of the object with the received data value at a target table associated with the database system.

2. (Currently Amended) The method of claim 1, wherein the data object is a large object (LOB).

3-4. (Cancelled)

5. (Currently Amended) The method of claim 1, wherein ~~the~~ capturing ~~(a)~~ information corresponding to an update of a data value of an object further comprises:

~~(a1)~~ storing the ~~data update~~ information corresponding to the update of the data value of the object including, wherein the stored data update information comprises the key column value that identifies the row in the source table in which the object resides.

6. (Currently Amended) The method of claim 5, wherein the capturing ~~(a)~~ information corresponding to an update of a data value of an object further comprises:

~~(a2)~~ capturing a key column update from the database log;

~~(a3)~~ matching a before update key column value ~~for~~ associated with the key column update with the stored key column value; and

~~(a4)~~ replacing the stored key column value with an after update key column value ~~for~~ associated with the key column update.

7. (Currently Amended) The method of claim 6, wherein ~~the~~ building ~~(b)~~ a query to obtain the data value of the object from the source table comprises:

~~(b1)~~ building the query to obtain the data value of the object from the source table using the ~~replacement~~ after update key column value.

8. (Currently Amended) The method of claim 6, wherein the before update key column value and the after update key column value ~~were~~ are recorded in the database log.

9. (Currently Amended) The method of claim 6, wherein the ~~data update~~ of the data value of the object and the key column update were previously performed in a same transaction.

10. (Currently Amended) The method of claim 5, ~~further comprising~~ wherein responsive to receiving an empty value for the data value of the object from the source table in response to the query, the method further includes:

~~(c) executing the query;~~

~~(d) receiving an empty value for the data;~~

~~(e) storing the data update information~~ corresponding to the update of the data value of the object in a missing data list, wherein the stored data update information corresponding to the update of the data value of the object including comprises the key column value that identifies the row in the source table in which the object resides;

~~(f) capturing a key column update from the database log;~~

~~(g) matching a before update key column value for~~ associated with the key column update with the ~~stored~~ key column value stored in the missing data list; and

~~(h) replacing the stored key column value~~ stored in the missing data list with an after update key column value ~~for~~ associated with the key column update; and

~~(i) building a second query to obtain the data value of the object from the source table using the replacement after update~~ key column value.

11. (Currently Amended) The method of claim 10, further comprising:

~~(j) executing the second query; and~~

~~(k) receiving the data value of the object from the source table in response to the second query, and~~

~~(l) wherein replicating the update comprises replicating the data update and the key column update and the update of the data value of the object with the received data value at the~~

target table associated with the database system.

12. (Currently Amended) The method of claim 10, wherein the data update of the data value of the object and the key column update were previously performed in different separate transactions.

13. (Currently Amended) A computer readable medium with program instructions, tangibly stored thereon, for asynchronously replicating data changes in a database system, the program instructions comprising the instructions for:

(a) capturing, from a database log associated with the database system, information corresponding to an update of a data value of an object for a data update in a source table from a database log associated with the database system, wherein a the database log not including the data value from the data update is not in the database log of the object, wherein the update information corresponding to the update of the data value of the object comprising comprises a key column value that identifies a row in the source table in which the object resides; and

(b) building a query to obtain the data value of the object from the source table, the query including the key column value that identifies the row in the source table in which the object resides; using the update information;

executing the query;

receiving the data value of the object from the source table in response to the query; and

replicating the update of the data value of the object with the received data value at a target table associated with the database system.

14. (Currently Amended) The computer readable medium of claim 13, wherein the data

object is a large object (LOB).

15-16. (Cancelled)

17. (Currently Amended) The computer readable medium of claim 13, wherein the instructions for capturing instruction-(a) information corresponding to an update of a data value of an object further comprises the instructions for:

(a1) storing the ~~data-update~~ information corresponding to the update of the data value of the object including, wherein the stored data-update information comprises the key column value that identifies the row in the source table in which the object resides.

18. (Currently Amended) The computer readable medium of claim 13, wherein the instructions for capturing instruction-(a) information corresponding to an update of a data value of an object further comprises the instructions for:

(a2) capturing a key column update from the database log;

(a3) matching a before update key column value ~~for~~ associated with the key column update with the stored key column value; and

(a4) replacing the stored key column value with an after update key column value ~~for~~ associated with the key column update.

19. (Currently Amended) The computer readable medium of claim 18, wherein the instructions for building instruction-(b) a query to obtain the data value of the object from the source table comprises the instructions for:

(b1) building the query to obtain the data value of the object from the source table using

the replacement after update key column value.

20. (Currently Amended) The computer readable medium of claim 18, wherein the before update key column value and the after update key column value ~~were~~ are recorded in the database log.

21. (Currently Amended) The computer readable medium of claim 18; wherein the data update of the data value of the object and the key column update were previously performed in a same transaction.

22. (Currently Amended) The computer readable medium of claim 17; ~~further comprising the instructions for~~ wherein responsive to receiving an empty value for the data value of the object from the source table in response to the query, the computer readable medium further comprises instructions for:

~~(e) executing the query;~~

~~(d) receiving an empty value for the data;~~

~~(e) storing the data-update information corresponding to the update of the data value of the object in a missing data list, wherein the stored data-update information corresponding to the update of the data value of the object including~~ comprises the key column value that identifies the row in the source table in which the object resides;

~~(f) capturing a key column update from the database log;~~

~~(g) matching a before update key column value for~~ associated with the key column update with the ~~stored~~ key column value stored in the missing data list; and

~~(h) replacing the stored key column value stored in the missing data list with an after~~

update key column value ~~for~~ associated with the key column update; and

(i) building a second query to obtain the data value of the object from the source table using the ~~replacement~~ after update key column value.

23. (Currently Amended) The computer readable medium of claim 22, further comprising the instructions for:

(j) executing the second query;

(~~k~~) receiving the data value of the object from the source table in response to the second query; and

(~~l~~) wherein the instructions for replicating the update comprises instructions for replicating the data update and the key column update and the update of the data value of the object with the received data value at the target table associated with the database system.

24. (Currently Amended) The computer readable medium of claim 22, wherein the data update of the data value of the object and the key column update were previously performed in ~~different~~ separate transactions.

25. (Currently Amended) A system comprising:

a source database comprising a source table;

a database log ~~at~~ associated with the source database, ~~wherein the database log comprises~~ comprising information corresponding to an update of a data value of an object for a data update in the source table, ~~wherein a~~ the database log not including the data value from the data update ~~is not in the database log of the object, wherein the update information corresponding to the~~ update of the data value of the object comprising ~~comprises~~ a key column value that identifies a

row in the source table in which the object resides; and

a mechanism for,

building a query to obtain the data value of the object from the source table, the query including the key column value that identifies the row in the source table in which the object resides; using the update information;

executing the query;

receiving the data value of the object from the source table in response to the query; and

replicating the update of the data value of the object with the received data value at a target table associated with a target database.

26. (Currently Amended) The system of claim 25, wherein the ~~data~~ object is a large object (LOB).

27-28. (Cancelled)

29. (Currently Amended) The system of claim 25, further comprising:

a memory ~~at~~ associated with the source database,

wherein the ~~data-update~~ information corresponding to the update of the data value of the object including the key column value that identifies the row in the source table in which the object resides is stored in the memory.

30. (Currently Amended) The system of claim ~~25~~ 29; wherein:

the database log further comprises information ~~for~~ corresponding to a key column update,



where the information for corresponding to the key column update comprising comprises a before update key column value and an after update key column value,

wherein the mechanism is operable to match the before update key column value is matched with a stored the key column value stored in the memory and replace, wherein the stored the key column value stored in the memory is replaced with the after update key column value.

31. (Currently Amended) The system of claim 30, wherein the query is built to obtain the data value from the source table using the ~~replacement~~ after update key column value.

32-34. (Cancelled)